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Attention and social behavior of children with intellectual developmental disabilities

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Abstract

The goals of the research are in relation to the examination of correlative relations of individual components of attention and social behavior as the identification of a significant component for adequate social behavior in children with intellectual disability. We have used AAMD scale by evaluating social interaction in terms of education. The vigilance and tenacity of attention of the examinees was tested with the use of the Cancellation tasks. The selectivity of attention was assessed with the Stroop Test. With the help of a beta test, we have identified that the vigilant attention is more "significant" for the adequate functioning of children with intellectual developmental disability.

Key words: intellectual disability, attention, vigilance, selectivity.

Introduction

"Everyone knows what attention is. That is when the conscience envelops, in a clear and vivid form one of what seems several simultaneous objects or trains of thoughts…" (James, 1980, pg. 403).

The majority of the works dating back to the fifties can be perceived as research of attention that is reflected through the selectivity of information that is received from the exterior surroundings. Broadbent thinks that attention is one type of a filter between a sensory input and the structures where the cognitive processes take place. The coiner of functional psychology V. James (James, 1980) describes attention as a process of information selection prior to its entry into the consciousness. The neurophysiological concept of attention describes it as a non specific readiness for reception and processing of information received from the outside. Luria, in the neuropsychological concept on the functional organization of the nervous system, in which the processes of an individual are seen through three basic functional blocks, describes the attention within the framework of the first functional block and considers it to represent the first level of central information processing. Baddeley defines attention as one of the most important functions and whose malfunctioning leads to a breakdown of higher mental processes (Broadbent 1978; James, 1980). Bearing in mind that those exact functions are the ones most responsible for adequate social behavior and adaptation

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of an individual, this study is aimed towards the assessment of attention and its influence on social behavior and social interaction of children with intellectual developmental disability.

From the elementary, involitional attention that appears in the first days of a person's life and which is of biological origin, the most complex form of volitional attention is developed and represents a social act. Stably organized volitional attention which involves speech is formed in a child at the end of its pre-school period, so that the child is able to act at the change of the course of movement, activities and organization of sensory processes (Luria, 1974), thus becoming an active subject of social interaction in its existential surroundings.

Social interaction can be defined as the certain behavior of an individual, originating as a product of information from the external and internal environment, that following their processing within the central nervous system pass through cognitive and emotional processes. If any part of this complex process becomes perturbed, a disturbance in social functioning can be expected.

In accordance with this type of theoretical concept of research, the empirical framework of research was viewed through the problem that was defined in the question as to whether there exists a relationship between certain components of attention and the social behavior of children with intellectual disability?

Practical implications of this paper pertain to the behavioral characteristics in situational conditions of education and treatment of these children, by way of which the possibility of their treatment founded on multidisciplinary orientation are supplemented.

Study Goals

- Establishing the correlative relation between certain components of attention and social behavior
- Establishing which of the estimated components of attention has the most important influence on adequate social behavior in educational conditions of the children in the sample group.

1. Sample

The study encompassed 93 pupils with mild intellectual disability. Examinees were, in calendar years 8 to 12 years and 3 months, of both sexes, without neurological, sensory or combined disturbances. The study was conducted at all elementary schools for children with mild intellectual disability on the territory of Belgrade.

Table 1: Distribution of the sample according to the calendar years

Calendar Age	8,6-9,6	9,7-10,6	10,7-11,6	11,7-12,3	Total
Number	17	24	26	26	93
%	18,3	25,8	27,9	27,9	100

The distribution of the sample was divided into four categories in accordance with the calendar age of the pupils. The calendar age of the children in our sample ranges from 8 years and 6 months to 12 years and 3 months. The youngest examinees (8,6-9,6) are represented in the smallest percentage (18,3%). Two groups of the oldest (10,7-11,6 and 11,7-12,3) examinees are equally represented with 27,9% while the other examinees aged 9,7-10,6 years are represented at a percentage of 25,8.

2. Study Method

The vigilance and tenacity of attention of the examinees was tested with the use of the Cancellation tasks. There are different forms of the applied test. In this study the test used consisted of rows of letters in which there are two target stimuli that the examiner has to cross off. The subject is expected to "as quickly and accurately" possible to cross off the letters A and C. The task is time limited to 4 minutes, where the results are recorded for every minute that passes.

The selectivity of attention was assessed with the Stroop Test. This test assesses the selective processing of one visual characteristic with the continuous blockade of the processing of others. The test represents an evaluation of the dysfunction of the prefrontal cerebral region that is responsible for distractibility.

All three segments of this test were used in our study; it encompassed three cards with 5x10 stimuli. The first part involves words that signify the names of the four basic colors (red, blue, green and yellow). The examinees are expected to read the words in the order that they are written. The second part of the test consists of cubes drawn in red, blue, green and yellow. The examinee has to name the colors. And the third part consists of words written in a color always different from the one that the word designates. The task in this part of the test involves naming the color. The time in seconds and the number of errors made by the examinees are recorded, for the entire test as well as the first and the second five rows; a spontaneously corrected error is recorded as a correct answer.

3. Results

Table 2. Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0,527	0,278	0,245	3,17

Table 3. ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	335,469	4	83,867	8,371	,000
Residual	871,607	87	10,018		
Total	1207,076	91			

a Predictors: (Constant), attention
b Dependent Variable: Social interaction

Between the examined variables on the one hand and the assessment of social behavior on the other, there is a positive linear correlation of medium intensity in the population of children with mild intellectual disability. Around 28% of the total variance to adequate social behavior can be explained by the differences in the results obtained of certain components of attention. The quotient of the mean square due to regression and the mean square for the residual is 8,371 and it reaches a level of a high statistical significance.

Table 4. Coefficients

	Standardized Coefficients	t	Sig.
	Beta		
(Constant)		10,212	0,000
Selective attention (reaction time)	0,054	0,548	0,585
Selective attention (number of errors)	0,077	0,782	0,437
Vigilance (accurate)	0,428	4,360	0,000
vigilance (errors)	0,250	2,566	0,012

a Dependent Variable: SOCIAL INTERACTION

The tests for vigilant attentiveness were singled out by the beta coefficient as the most significant factors of adequate social behavior in children with intellectual disability.

4. Discussion

In this study it was established that the vigilancy of attention plays a significant role in relation to selective processing of information when the evaluation of social interaction in children with intellectual disabilities is in question.

Parallel to the development of selective attention, which matures with age, the abilities of maintaining, and distributing attention, as well as its flexibility are also developed. The distribution of attention and flexibility are the components that can be found in older children, while vigilance or the ability to sustain attention exhibits its most prominent development around the age of five. All of these characteristic of attention develop gradually but not in cohesion with each other, so only some of them reach their level of maturity around eleven years of age. (Levin et. all., 1991).

The fact that the vigilance of attention develops by calendar earlier than the selectivity of attention, just shows us that we can interpret the results of this research from that aspect.

Volitional, goal driven attention, where the conscious decision for the activity of an individual to be focused on a certain subject matter dominates, is connected to the maturing of the functions of the prefrontal region of the brain and its complete development is reached in adolescence (Lezack, 1976). The development of attention depends first and foremost on the development of the brain in its entirety and myelinization. This development follows a course beginning with the strengthening and coordination of the components of attention and concludes with the establishment of volitional attention and metacognitive structures. Due to metacognition which is comprised of knowledge of knowledge and the experiences in the execution of the cognitive process, it is possible to modify behavior in coordination with the demands of a situation, task and the abilities of the individual.

If we were to observe the vigilancy of attention through the ability to make a rapid “shift” of attention from one task to another, then our data are in congruence with that fact and shows that the pupils that have the ability to shift their attention shift from one activity to the other also have better organized social interaction and socially acceptable behavior. The fact that a hyperkinetic child has damaged executive and not perceptive components of attention shifting speaks in favor of our theory.

The deficit of vigilance leads to hindrances in learning and social functioning, both in children of the mass population and in children with intellectual developmental disability. Adequate social behavior demands of the pupil focused selective concentration and if a deficit in attention occurs, it leads to diminished efficacy in social functioning and in some cases it is totally incapacitated. Lack of motivation and emotional deficit as common companions to attention deficit make this process even more difficult. Therefore, vigilant attention represents a necessary component for adequate reception of information from the external environment, which is a basic condition for the quality functioning in children with intellectual disabilities.

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